(7.2%). Forty-eight patients (90.5%) underwent complete lymphadenectomy. 35 patients underwent brain metastasectomy. 18 underwent SRS.

**Results:** There was no postoperative mortality and severe complications after either lung or brain surgery. Histology showed 34 adenocarcinomas, 16 squamous cell carcinomas, and 3 large cell lung cancers. 15 patients (28.3%) had no evidence of lymph node mtastases (N0), 20 patients (37.7%) had hilar metastases (N1), and 18 patients (34%) had mediastinal metastases (N2). The 1-,2-, 3- and 5-year overall survival rates were 49%,19%, 10%, and 5%, respectively. The corresponding data for neurosurgery group was 55%, 17%, 11%, and 6%, respectively. The median survival time was 13 months. For SRS group the corresponding data were 44.8%, 20.9% 10.5%, and 2%, respectively. The median survival time was 14 months. The differences between the two groups were not significant (p>0.05). In lymph node negative patients (N0), the overall 5-year survival rate was 10%, as compared with a 1% survival rate in patients with lymph node metastases (N1-2). The difference was significant (p<0.01). For adenocarcinomas, the 5-year survival rate was 5%. The correspondent data for squamous cell lung cancers was 3%. The difference was not significant (p>0.05).

**Conclusion:** Although the overall survival rate for patients who have brain metastases from NSCLC is poor, surgical resection or radiosurgery may prove benificial in a select group of patients with synchronous brain metastases and lung cancer without lymph node metastases.

**P3-190** **NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6**

### Postoperative 3D Conformal Radiation Therapy in Non Small Cell Lung Cancer

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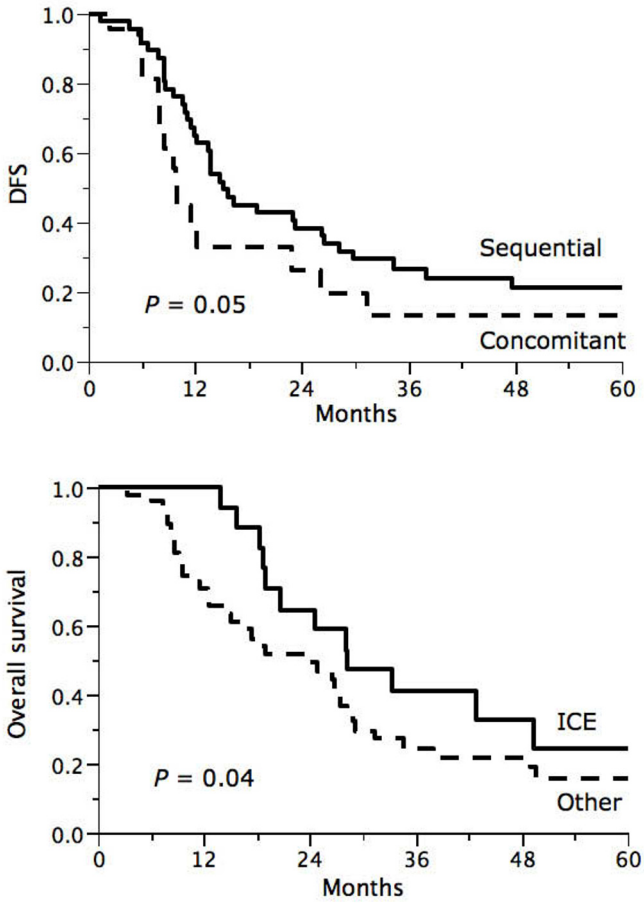
**Background:** Postoperative radiation therapy (PORT) in non small cell lung cancer (NSCLC) remains controversial. However, involved-field conformal (3D) RT has never been studied prospectively. In this study, we aim to assess the outcome of patients treated with involved-field 3D PORT with or without chemotherapy in NSCLC.

**Methods:** From September 1996 to 2006, data from 75 patients treated with curative surgery and PORT for NSCLC were retrospectively analyzed. Median age was 58 years (range: 38-76). There were 5 patients with stage I, 22 with stage II, and 48 with stage III disease. Pneumonectomy or lobectomy was realized in 24 (32%) and 51 (68%) patients, respectively. Mediastinal lymphadenectomy was performed in all patients. Chemotherapy was given in 15 (20%). All patients had 3D conformal planning. Median RT dose was 60 Gy, and CTV included bronchial stump and only positive nodal areas.

**Results:** All patients have completed full treatment. With a median follow-up of 55 months, 26 patients are alive without disease. Median overall survival time was 24 months, with survival rate of 35% at 5 years. The 5-year locoregional control and distant disease-free rates were 80% and 57%, respectively (Fig.1). Patients treated with pneumonectomy and those treated with at least 60-Gy PORT had better outcome (Fig.2). Grade 3 or more CTC v3.0 toxicity was observed only in 4 (5%) pts.

**Conclusions:** We conclude that involved-field 3D conformal 60-Gy PORT improves locoregional control without increasing lethal toxicity.




**P3-191** **NSCLC: Radiation Posters, Wed, Sept 5 – Thurs, Sept 6**

### Prediction of radiation pneumonitis following accelerated hypofractionated (3 Gy) radiotherapy alone for non-small cell lung cancer: analysis of clincal and dosimetric factors

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**Purpose:** To identify clinical and dosimetric factors predicting the risk of radiation pneumonitis (RP) and to evaluate the value of these factors in patients treated by accelerated hypofractionated radiotherapy (AHRT) alone for non-small cell lung cancer.

**Materials and Methods:** Sixty-nine patients were treated with AHRT to median dose of 54 Gy (range, 45-60 Gy) in daily 3 Gy fractions over 4 weeks. Dose-volume histograms (DVH) were obtained based on the adjusted dose converted to biologically equivalent dose delivered with 2 Gy per fraction using alpha/beta ratio of 3 in linear quadratic model. Dosimetric parameters for total lung were obtained: mean lung dose (MLD), Vdose (percentage of total lung volume irradiated more than dose). Radiation pneumonitis (RP) was graded according to the Radiation Therapy Oncology Group (RTOG) Acute and Late Lung Morbidity Scoring Criteria. We evaluated clinical parameters (sex, age, performance status, weight loss, pre-RT FEV1, tumor location, stage, RT dose) and dosimetric parameters (MLD, V5-50 in increments of 5 Gy) associated with the prediction of RP.

 

**Results:** The median follow-up period was 11 months (range, 3 - 40). Sixteen patients developed grade 3 or more RP in 1 ~ 10 months (median 3 months) after the cessation of RT. The actuarial incidence of RP was 26.4% at 12 months. All dosimetric parameters were significantly associated with the risk of RP by univariate analysis. V5 and V15 were most significant factors ($p<0.0001$). The 1-year cumulative incidence of grade≥3 RP were 0% and 51.3% in patients with V5≤54.5% and V5>54.5%, 3.6% and 50.6% in patients with V15≤34% and V15>34%. By multivariate analysis, V15 was the only factor associated with risk of RP. We included only V15 in the analysis as a dosimetric factor because all the dosimetric factors were highly correlated each other. There was no clinical factor associated with the risk of RP.

**Conclusion:** Dosimetric parameters were valuable in predicting the risk of RP in patients treated by AHRT alone. For lowering the risk of RP in patients treated by AHRT regimens, we should make efforts to maintain the V5 less than 54.5 % and the V15 less than 34%.

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### Radiation therapy alone for unresectable stage III non-small cell lung carcinoma with poor performance

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**Purpose:** Many studies for unresectable stage III non-small cell lung carcinoma (NSCLC) focused on patients with good performance. However, there were few reports for patients with poor performance status. We treated them with split course radiation therapy (RT) alone and evaluated the results.

**Methods and Materials:** From Jun 1996 to Mar 2004, 80 patients started the split course RT according to our protocol. They were confirmed to have unresectable stage III NSCLC with poor performance; performance scale „d ECOG 2. Initially they received 30 Gy of radiation with 2.5 or 3 Gy per fraction to gross tumor volume (GTV). The tumor response was evaluated 2-3 weeks later. And the second course of RT was recommended for good responders: „d 50% tumor diameter reduction or improved distal atelectasis. The treatment related toxicity was evaluated also.

**Results:** Eleven patients did not finish the initial course of RT (3-27 Gy) due to disease progression or personal reasons. Thirty-eight patients (55.1%) among 69 patients who completed the first course of RT showed a good response. Thirty good responders received the second course of RT with total 51 to 60 Gy. Eight patients of them did not receive the second course of RT due to distant metastasis or poor performance. Two-year survival rate and median survival were 14.7% and 7 months in all patients, and 26.0% and 14 months in 30 good responders who completed the second course of RT, respectively. Five patients (12.8%) from 39 evaluable patients had grade III radiation esophagitis (N=1) or pneumonitis (N=4).

**Conclusions:** RT alone was tolerable modality for unresectable stage III NSCLC with poor performance. In addition, it was able to produce comparable survival results in patients who showed good response after the first course RT and completed the second course of RT compared with patients with good performance.

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### Toxicity and outcome of three dimensional conformal radiotherapy for non small cell lung cancer

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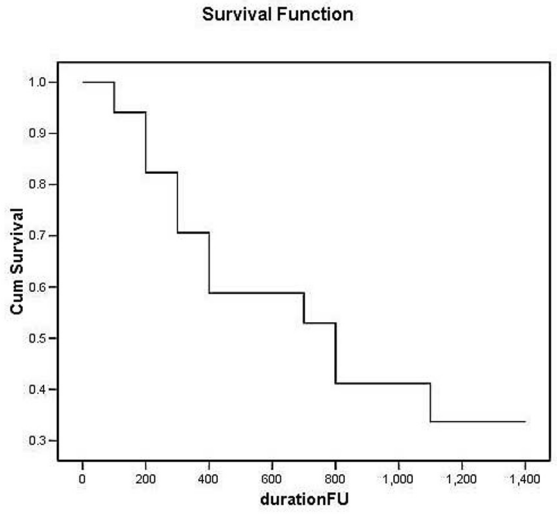
**Background:** Radical chemoradiotherapy is a highly effective treatment for inoperable non small cell lung cancer (NSCLC). The doses required to achieve remission or even cure have a high incidence of toxicity to normal thoracic tissue. 3 dimensional conformal radiotherapy (3DCRT) reduces this risk maintaining a lethal tumour dose. We report the characteristics of patients treated with combination chemotherapy and 3DCRT in a district hospital.

**Methods:** Eighteen patients (3 female aged 65.2 ± 10 years) presenting for treatment of inoperable NSCLC between June 2003 and June 2004 received treatment with 3DCRT and standard chemotherapy regimes were subjected to retrospective analysis of computerised data and case notes. Record was made of patient demographics, tumour staging, GTV, PTV, V20 and radiotherapy dose schedule. The radiotherapy dose/schedule varied between 55 Gy to 72 Gy and the commonest prescription was a single phase 66Gy in 33 fractions given over 6.5 weeks. Follow up was undertaken at least weekly during treatment and at regular intervals thereafter.

**Results:** Performance status ranged from 0-2 (mean 1), tumour staging was T 2.4 ± 1.1 N1.6 ± 1.2 M 0 ± 0, GTV 134.4 ± 71.7, PTV 504.4 ± 199.3 and V20 22 ± 6%. Progression free survival was 16.7 ± 14.8 months. Radiation toxicity assessed by the RTOG/EORTC criteria included acute oesophagitis in 10 (grade 1 in 8, grade 2 in 2), acute pneumonitis in 1, late pneumonitis in 2. Follow up duration was 22.6 ± 14.4 months, median survival was 23.8 months with 6 (33%) patients surviving over 1000 days.

**Conclusion:** The first year's experience of Dorset Cancer Centre with 3DCRT has demonstrated the modality to be safe and effective for treatment of inoperable NSCLC. Significant complications occur in only a minority of patients and mean progression free survival exceeds a year in our series.




**Cumulative Survival in Days**